What is claimed is:

1. A grating element for use with a line-narrowing and/or line-selection package of an excimer or molecular fluorine laser having a dielectric highly reflective (HR) coating formed thereon.

2. An excimer or molecular fluorine laser system, including a line-narrowing and/or line-selection package for reducing the bandwidth of the laser beam to less than 1 pm, including a grating element having a dielectric HR coating formed thereon, the grating element for dispersing the beam and for retroreflecting the beam as a resonator reflector element.

3. A grating element for use with a line-narrowing and/or line-selection package of an excimer or molecular fluorine laser having a dielectric anti-reflective (AR) coating formed thereon.

4. An excimer or molecular fluorine laser system, including a line-narrowing and/or line-selection package for reducing the bandwidth of the laser beam to less than 1 pm, including a grating element for dispersing the beam having a dielectric AR coating formed thereon.

5. The laser system of Claim 4, wherein the grating element is disposed in front of a resonator reflector element.

6. The laser system of Claim 5, wherein the resonator reflector element is highly reflective.

7. The laser system of Claim 5, wherein the resonator reflector element is partially reflective as an output coupler.

8. A grism element for use with a line-narrowing and/or line-selection package of an excimer or molecular fluorine laser for dispersing

the beam, said grism element having a grating surface and a prism portion.

9. The grism element of Claim 8, having a dielectric AR coating formed thereon.

10. The grism element of Claim 9, wherein the dielectric AR coating is formed on the grating surface.

11. The grism element of Claim 10, wherein a dielectric HR coating is formed on a rear surface of the prism portion.

12. The grism element of Claim 9, wherein a dielectric AR coating is formed on a rear surface of the prism portion.

13. The grism element of Claim 12, wherein a dielectric HR coating is formed on the grating surface.

14. The grism element of Claim 12, wherein a dielectric AR coating is formed on the grating surface.

15. The grism element of Claim 8, having a dielectric HR coating formed thereon.

16. The grism element of Claim 15, wherein the dielectric HR coating is formed on the grating surface.

17. The grism element of Claim 15, wherein the dielectric HR coating is formed on a rear surface of the prism portion.

18. An excimer or molecular fluorine laser system, including a discharge chamber disposed within a laser resonator having a line-

narrowing and/or line selection package for reducing the bandwidth of the laser beam to less than 1 pm, including a grism element with a prism portion and a grating surface for dispersing the beam.

19. The laser system of Claim 18, wherein the grism element has a highly reflecting surface for reflecting the beam as a highly reflective resonator reflector.

20. The laser system of Claim 19, wherein the grating surface is the highly reflecting surface, and the grating surface faces the laser discharge chamber.

21. The laser system of Claim 19, wherein the grating surface is the highly reflecting surface, and the prism portion faces the laser discharge chamber.

22. The laser system of Claim 19, wherein a rear surface of the prism portion is the highly reflecting surface, and the grating surface faces the laser discharge chamber.

23. The laser system of Claim 18, wherein the grism element is disposed in the laser resonator in front of a highly reflective resonator reflector.

24. The laser system of Claim 23, wherein the grating surface has a dielectric AR coating formed thereon.

25. The laser resonator of any of Claims 19, 21 or 23-24, wherein a beam entry/exit surface of the prism portion has a dielectric AR coating formed thereon.

26. The laser resonator of Claim 25, wherein the grating surface has a dielectric HR coating formed thereon.

27 ~~26~~. The laser resonator of any of Claims 19-21, wherein the grating surface has a dielectric HR coating formed thereon.

28 ~~27~~. The laser system of any of Claims 18-19, 21 or 23, wherein the grism element is oriented such that the prism portion serves as a beam expander.

29 ~~28~~. The laser system of Claim 18, wherein the grism element is disposed in the laser resonator in front of a partially reflective resonator output coupler.

30 ~~29~~. The laser system of Claim 28, wherein the grating surface has a dielectric AR coating formed thereon.

31 ~~30~~. The laser system of any of Claims 28-29, wherein a beam entry/exit surface of the prism portion has a dielectric AR coating formed thereon.

32 ~~31~~. The laser system of Claim 18, wherein the grism is disposed within the laser resonator to serve as an output coupling element.

33 ~~32~~. The laser system of Claim 31, wherein the grating surface faces the laser discharge chamber and has a dielectric AR coating formed thereon.

34 ~~33~~. The laser system of Claim 31, wherein an entry exit surface of the grism faces the discharge chamber and has a dielectric AR coating formed thereon.

35 ~~34~~. The laser system of Claim 31, wherein the grating surface faces the laser discharge chamber and is partially reflective such that the grating surface serves as a resonator reflector surface.

36 ~~35~~. The laser system of Claim 31, wherein a rear surface of the prism portion faces the discharge chamber and is partially reflecting such that the rear surface of the prism portion serves as a resonator reflector surface.

37 ~~36~~. The laser system of any of Claims 18-24, further comprising a beam expander between the discharge chamber and the grism element.

38 ~~37~~. The laser system of Claim 36, wherein the beam expander includes a plurality of DUV and/or VUV transparent prisms.

39 ~~38~~. The laser system of Claim 37, wherein said plurality of prisms each has at least one dielectric AR coating formed thereon.

40 ~~39~~. The laser system of Claim 36, further comprising an aperture disposed between the discharge chamber and the beam expander.

41 ~~40~~. The laser system of Claim 36, further comprising an etalon within the resonator for further line-narrowing and/or line-selection.

42 ~~41~~. The grating element of any of Claims 1 or 3, further comprising a bulk substrate having a plurality of grooves formed directly therein, wherein the dielectric coating is formed directly over said substrate and plurality of grooves.

43 ~~42~~. The grating element of any of Claims 1 or 3, further comprising a bulk substrate having a ruled epoxy layer formed thereon

having a plurality of grooves, wherein the dielectric coating is formed directly over said ruled epoxy layer.

~~43~~ 44. The laser system of any of Claims 2 or 4, wherein the grating element further comprises a bulk substrate having a plurality of grooves formed directly therein, wherein the dielectric coating is formed directly over said substrate and plurality of grooves.

~~44~~ 45. The laser system of any of Claims 2 or 4, wherein the grating element further comprises a bulk substrate having a ruled epoxy layer formed thereon having a plurality of grooves, wherein the dielectric coating is formed over said ruled epoxy layer.

~~45~~ 46. An excimer or molecular fluorine laser system, including a discharge chamber disposed within a laser resonator having a line-narrowing and/or line-selection package for reducing the bandwidth of the laser beam, including a grism element formed from a DUV and/or VUV transparent material, said grism having a prism portion and a grating surface, wherein the surface closest to the discharge chamber has an AR coating formed thereon.

~~46~~ 47. The laser system of Claim 45, wherein said surface closest to said discharge chamber is said grating surface.

~~47~~ 48. The laser system of Claim 46, wherein a rear surface of said prism portion has a HR coating formed thereon.

~~48~~ 49. The laser system of Claim 46, wherein a beam entry/exit surface of said prism portion has an AR coating formed thereon, wherein said laser system further comprises a highly reflective resonator reflector after said grism.

49. The laser system of Claim 46, wherein a rear surface of said prism portion is partially reflecting such that said rear surface serves as a beam output coupler of the laser system.

50. The laser system of Claim 45, wherein said surface closest to said discharge chamber is a beam entry/exit surface of said prism portion.

51. The laser system of Claim 50, wherein said grating surface has a HR coating formed thereon.

52. The laser system of Claim 50, wherein said grating surface has an AR coating formed thereon, wherein said laser system further comprises a highly reflective resonator reflector after said grism.

53. The laser system of Claim 50, wherein said grating surface is partially reflecting such that said grating surface serves as a beam output coupler of the laser system.

54. An excimer or molecular fluorine laser system, including a discharge chamber disposed within a laser resonator having a line-narrowing and/or line-selection package (for reducing the bandwidth of the laser beam) including a grism element formed from a DUV and/or VUV transparent material, said grism having a prism portion and a grating surface, wherein the surface closest to the discharge chamber is partially reflecting and serves as a beam output coupler of said laser system.

55. The laser system of Claim 54, wherein said partially reflecting surface is said grating surface.

56. The laser system of Claim 54, wherein said partially reflecting surface is a rear surface of said prism portion and said outcoupled beam exits said grism through said grating surface.

add A17